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OSA 3023-64
 23 June 1964

MEMORANDUM FOR THE RECORD

SUBJECT:

Trip Report, Test of System 12A

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1. During the period of 17 - 19 June 1964, I visited the [REDACTED] to observe a test of the System 12A in a multi-signal environment. Present also, was [REDACTED] of IDEALIST Operations, [REDACTED] (the contractor for the system).

2. The purpose of the test was to subject the system to a multi-signal environment wherein TWS emitters were present with CON SCAN and EW type signals. The first series consisted of signals exhibiting proportional range on the indicator. In this manner, maximum range of the emitter from the receiver was evidenced by a maximum length trace. As range closed the trace length on the indicator became shorter. The second series of tests programmed the same sequence of emitters, but the circuits of the receiver were changed to present the reciprocal of range such that emitters at the maximum range was presented on the indicator as traces of minimum length. As range closed, the trace length on the indicator became longer.

3. These tests were performed in an outdoor test area. Range of the emitter to the receiver was simulated by adjusting the angle of illumination between the antennas. It became evident that in the presence of a single signal, or of two signals separated in azimuth that identification was possible, i.e., determination of EW, CON SCAN or TWS. Also range could be read with reasonable accuracy.

4. It was also noted that the graphic representation which is often used to describe the "fan" appearance of the signal tends to be misleading. The individual strobes which constitute the "fan" flicker ON and then OFF before the next strobe of that "fan" is presented on the indicator. It is because of the persistence of the eye and of the CRT phosphors that the "fan" is evident. It was noted that by paying very close attention to the indicator, the "fan" could be seen. In my personal experience, it required several revolutions of the 12A "passes" before the "fan" image was evident. To determine range of the emitter, it was necessary to watch several "passes", select the single strobe (or shortest strobe for the 1/R presentation) and then estimate the range.

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25X1A 5. In the presence of multiple signals, all from the same general direction, identification was completely confused, and it became quite impossible to sort out the various signals. [REDACTED] indicated that he had some success by correlating the PRF lights with a given strobe in making signal identification but that this require an extended period of time and close attention to the indicator.

6. The test confirmed my opinion that I/R presentation is preferred, and that the effectiveness of the system breaks down in a multi-signal environment where the emitters are in the same general azimuth. Also, it was evident that additional information for the user is required to enable more rapid, definite identification of the signals. In addition to the audio, which is now available, it is suggested that consideration be given to the incorporation of sector warning lights. The indicator would be sectioned off between 90 and 270 degrees relative bearing, 270 to 330 degrees, 330 to 30 degrees and 30 to 90 degrees, and each sector to have a warning lamp associated with it. When a signal is present which meets the signal requirements of the TWS radar, and is within the critical range of 30 miles, the sector light will come on, thus telling the operator that a signal of interest is in a given sector. Thus, even though the visual presentation on the indicator is badly confused with multiple signals, the operator will know that a signal of interest is in a given sector and that he can concentrate in observing that area.

SIGNED

[REDACTED]

25X1A COMMO/OSA [REDACTED] jb

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